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PATENT SPECIFICATION

456,358

Convention Dates (Germany)

May 11, 1934:
June 23, 1934:

Corresponding Applications in United Kingdom

No. 13576/35.
No. 13577/35. Dated May 8, 1935.

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SPECIFICATION No. 456,358.

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Page 3, line 50, *for* " the flank of the " *read* " the additional "

THE PATENT OFFICE,
February 22nd, 1937.

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nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to a rope clamp or capping for miner's cages of the kind in which the weight of the load is employed for clamping the rope.

The utilisation of the weight of the load for clamping the rope in clamps or cappings for the ropes of cages and the like is known per se. Thus, it has previously been proposed to pivot on the clamp a double-armed lever from one end of which the load is suspended and of which the other end presses the rope against the core or centre part of the clamp. An effective utilisation of the suspended load for the purpose of clamping the rope is not effected in this way, since the clamping surface and the lever arm on which the load acts are relatively small and the clamping pressure is not uniform over the entire clamping surface of the lever but diminishes from the clamping place which is situated nearest to the fulcrum. The pivotal movement also has a disadvantageous effect on the distribution of pressure. A hood-like construction of the clamping member carrying the load whereby the rope was almost completely covered so as to be invisible has also been proposed. This construction had the disadvantage that control and examination became very awkward and laborious and further it was also very difficult to pull the rope further through the clamp in order to compensate of further tightening means in addition to the load in order to press the rope against the core or centre part.

This has the disadvantage that, owing to the possibility of the additional tightening means becoming loose and the reduction in the diameter of the rope which may occur, the clamping pressure cannot be controlled with certainty, and there is also the danger that the individual strands of the rope may be damaged by excessive crushing of the rope which, on subsequent pulling in consequence of the tightening means becoming loose and the rope thinner, leads to further damage, which, if it remains hidden, may lead to disastrous consequences. In rope clamps or cappings having a hood-like clamping member which carries the load and is pressed against the centre-piece of the clamp by additional tightening means an additional means for securing the tail end of the rope is dispensed with in the known forms of construction. The consequence of this may be that, when wear on the rope has occurred and the cage is suddenly braked, the end of the rope slips between the centre-piece and the hood.

In the case of clamps which were not intended for use on miners' cages, it has previously been proposed to press the rope against a wedge-shaped core by means of a hood or sheath and to fix the tail end of the rope by means of a set screw. A clamp of this nature can, however, not be used for miners' cages

[*Price* 1/-]

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(One Complete Specification Left under Section 91 (2) of the Patents and Designs Acts, 1907 to 1932.)

Specification Accepted: Nov. 9, 1936.

(Under Section 91, sub-sections (2) and (4) (a) of the Patents and Designs Acts, 1907 to 1932, a single Complete Specification was left in respect of these Applications and of Application No. 13575/35, and was laid open to Inspection on Nov. 9, 1935.)

COMPLETE SPECIFICATION

Improvements in and relating to Clamps or Cappings for Winding Ropes for Miners' Cages

We, GUTEHOFFNUNGSHÜTTE OBERHAUSEN AKTIENGESELLSCHAFT, of Oberhausen, Rheinland, Germany, a German Company, Assignees of FRITZ OTTO and HANS WILMS, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to a rope clamp or capping for miner's cages of the kind in which the weight of the load is employed for clamping the rope.

The utilisation of the weight of the load for clamping the rope in clamps or cappings for the ropes of cages and the like is known per se. Thus, it has previously been proposed to pivot on the clamp a double-armed lever from one end of which the load is suspended and of which the other end presses the rope against the core or centre part of the clamp. An effective utilisation of the suspended load for the purpose of clamping the rope is not effected in this way, since the clamping surface and the lever arm on which the load acts are relatively small and the clamping pressure is not uniform over the entire clamping surface of the lever but diminishes from the clamping place which is situated nearest to the fulcrum. The pivotal movement also has a disadvantageous effect on the distribution of pressure. A hood-like construction of the clamping member carrying the load whereby the rope was almost completely covered so as to be invisible has also been proposed. This construction had the disadvantage that control and examination became very awkward and laborious and further it was also very difficult to pull the rope further through the clamp in order to compensate for any extension of the rope.

All the known forms of construction of clamps or cappings for ropes for use in mines in which the weight of the load is utilised for clamping the rope make use of further tightening means in addition to the load in order to press the rope against the core or centre part.

This has the disadvantage that, owing to the possibility of the additional tightening means becoming loose and the reduction in the diameter of the rope which may occur, the clamping pressure cannot be controlled with certainty, and there is also the danger that the individual strands of the rope may be damaged by excessive crushing of the rope which, on subsequent pulling in consequence of the tightening means becoming loose and the rope thinner, leads to further damage, which, if it remains hidden, may lead to disastrous consequences. In rope clamps or cappings having a hood-like clamping member which carries the load and is pressed against the centre-piece of the clamp by additional tightening means an additional means for securing the tail end of the rope is dispensed with in the known forms of construction. The consequence of this may be that, when wear on the rope has occurred and the cage is suddenly braked, the end of the rope slips between the centre-piece and the hood.

In the case of clamps which were not intended for use on miners' cages, it has previously been proposed to press the rope against a wedge-shaped core by means of a hood or sheath and to fix the tail end of the rope by means of a set screw. A clamp of this nature can, however, not be used for miners' cages

[*Price* 1/-]

because the pressure exerted by the set screw, if it could be sufficiently high, would lead to the specific pressure on the surface of the rope being excessive and consequent damage to the rope.

Also in the case of clamps which were not intended for miners' cages, it has previously been proposed to allow the hood which surrounds the centre-piece to clamp the rope only on one half of the centre-piece and to carry the hood on the centre-piece in such a manner that the hood can move relatively to the centre-piece.

In the clamp or capping of the present invention a hood, from which the cage is suspended, is employed and, in accordance with the invention, the hood surrounds the rope groove which is provided in the centre-piece only on one half of the centre-piece and clamps the rope only in this half, while in the other half of the centre-piece the end of the rope is fixed by means of clamping devices. Further, the hood is guided so that it can move in a direction which is inclined to the direction of the part of the rope clamped between the hood and the centre piece. By this means the result is obtained, on the other hand, that the rope is more easily accessible and can be better examined and, on the other hand, extensions of the rope can be more easily compensated, since, in order to release the clamp or capping, it is only necessary to release the flank of the hook which presses against the rope, and which is preferably formed by a rail which can be swung outwards. The clamping devices for fixing the end of the rope can be displaceable in the direction of the tail of rope and can be carried by an adjustable member which is provided on the centre-piece.

Alternatively, in accordance also with the invention, the hood may surround the groove in the centre-piece on the half of the centre-piece on which the free end of the rope lies and clamp the end of the rope on this half of the centre-piece. In this case the clamping devices for the tail end of the rope are provided behind the clamping surface on the hood. This form of construction has the further advantage that the part of the rope which is subject to the greatest load is not clamped and is always visible and can be examined when required.

Two constructional embodiments of a capping in accordance with the invention are illustrated by way of example in the accompanying drawings, in which:—

Figures 1 and 2 are a front elevation and side elevation respectively of one form of construction;

Figure 3 is a section on the line A—B of Figure 1;

Figures 4 and 5 illustrate in side elevation and section respectively the arrangement of the clamps on an adjustable device provided on the centre-piece of the clamp or capping;

Figure 6 is a front elevation of a second form of construction, and

Figure 7 is a section on the line C—D of Figure 6.

Referring to the drawings, in the construction according to Figures 1 to 5 the centre-piece of the clamp is indicated by the numeral 10. The centre-piece is provided with a guide 11 for the introduction of the winding rope 12. The hood 13 which surrounds one side of the centre-piece is guided on the centre-piece. The guiding means consist of a sliding piece 14 which is of somewhat greater thickness than the centre-piece and is connected by means of screws 15 with the side plates of the hood. The sliding piece 14 is mounted in a slot 14^1 in the centre piece. The flank of the hood, which is formed by an intermediate piece 16 by means of which the hood presses against the centre-piece, is preferably arranged so that it can swing about its lower end, so that after releasing the screws 17 it can be swung outwards. The end of the rope is fixed to the centre-piece by means of clamps 18. These clamps, as shown in Figures 4 and 5, can be mounted on a member 20 which is movable on the centre-piece in the direction of the tail of the rope. By introducing fitting pieces 21 at the upper side or under side of the movable member 20 the latter can be displaced in one direction or the other.

In the form of construction according to Figures 6 and 7, the hood 13 surrounds the rope groove which is provided in the centre-piece 10 on the half of the centre-piece which receives the tail of the rope, so that the part 12 of the rope which enters the clamp is not pressed against the centre-piece by the hood 13. Only the end part 12^1 of the rope is pressed by the hood 13 against the centre-piece. The hood consists of the two side plates 13^1, 13^{11} which are held together by means of screws 17. The edges of the side plates 13^1, 13^{11} are thickened at 16 and 16^1 and thereby form the pressure edge which presses the end 12^1 of the rope against the centre-piece. At the side at which the winding rope 12 is introduced the side plates are provided with a sliding abutment which, in the constructional example illustrated, permits displacement of the hood to take place in a vertical direction, so that the load which

is suspended at 8 presses the edges 16, 16¹ against the end of the rope. The sliding abutment consists of an intermediate piece 14 which is provided with an extension 25, the thickness of which slightly exceeds that of the centre-piece, whereby, in conjunction with the thickness of the edges 16, 16¹, the centre-piece lies between the side plates without abutting laterally against them. The centre-piece is provided with a recess 14¹ corresponding to the intermediate piece 14 in which the intermediate piece can be displaced on the centre-piece. In order to ensure that the centre-piece does not fall out when the rope is released, a pin 23 is inserted through the side plates and through an elongated hole 24 in the centre-piece. The end of the rope is fixed above the hood 13 by means of the clamps 18 to an extension of the intermediate piece 14. The rope guide 11 is likewise provided on the intermediate piece 14.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A rope clamp or capping for miners' cages of the kind in which the rope is clamped between a centre piece and a surrounding hood from which the cage is suspended, wherein the hood surrounds a rope groove in the centre piece only on one half of the centre piece and clamps the rope, while the end of the rope behind the part clamped by the hood is fixed to the centre piece by means of clamps, and the hood can move on the centre piece in a guide which is inclined to the part of the rope clamped between the hood and the centre piece.

2. A clamp or capping in accordance with claim 1, wherein the additional hood which presses against the centre-piece consists of a rail or the like which can be swung outwardly.

3. A clamp or capping in accordance with claim 1, wherein the flank of the clamping devices are arranged so that they can be shifted in the direction of the tail of the rope and are carried by an adjustable device provided on the centre piece.

4. A clamp or capping in accordance with claim 1, wherein the hood surrounds the rope groove in the centre piece on the side on which the free end of the rope lies and clamps the rope on this side.

5. A rope clamp or capping substantially as described with reference to the accompanying drawings.

Dated the 7th day of May, 1936.
For the Applicants:—
GILL, JENNINGS & EVERY-CLAYTON,
Chartered Patent Agents,
51/52, Chancery Lane, London, W.C.2.

Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1936.

Fig. 1.

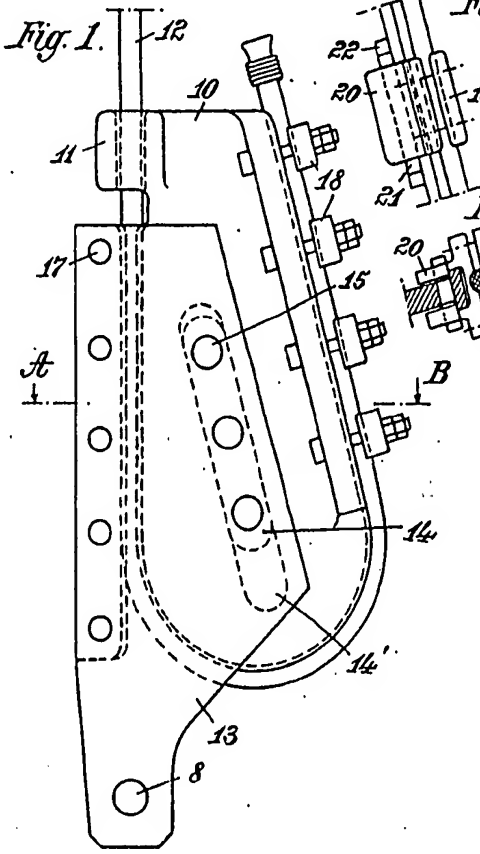

Fig. 4.

Fig. 5.

Fig. 2.

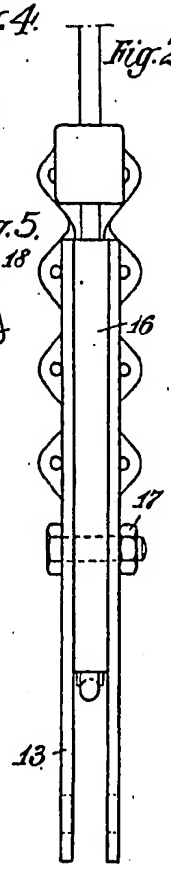

Fig. 3.

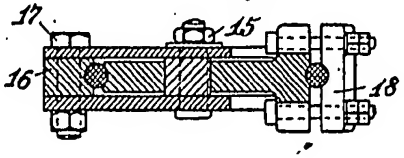

Fig. 6.

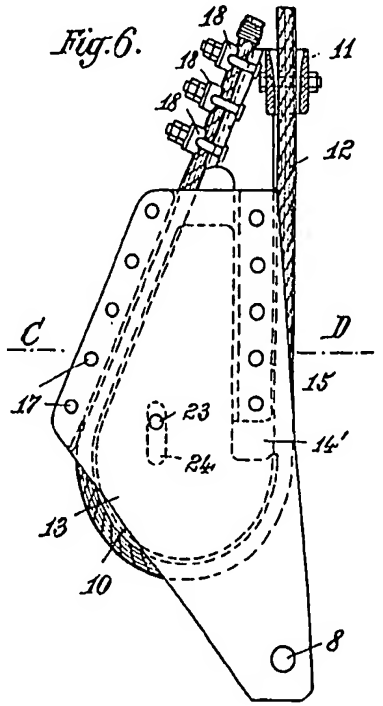

Fig. 7.

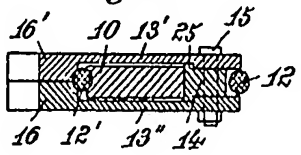

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Fig. 1.

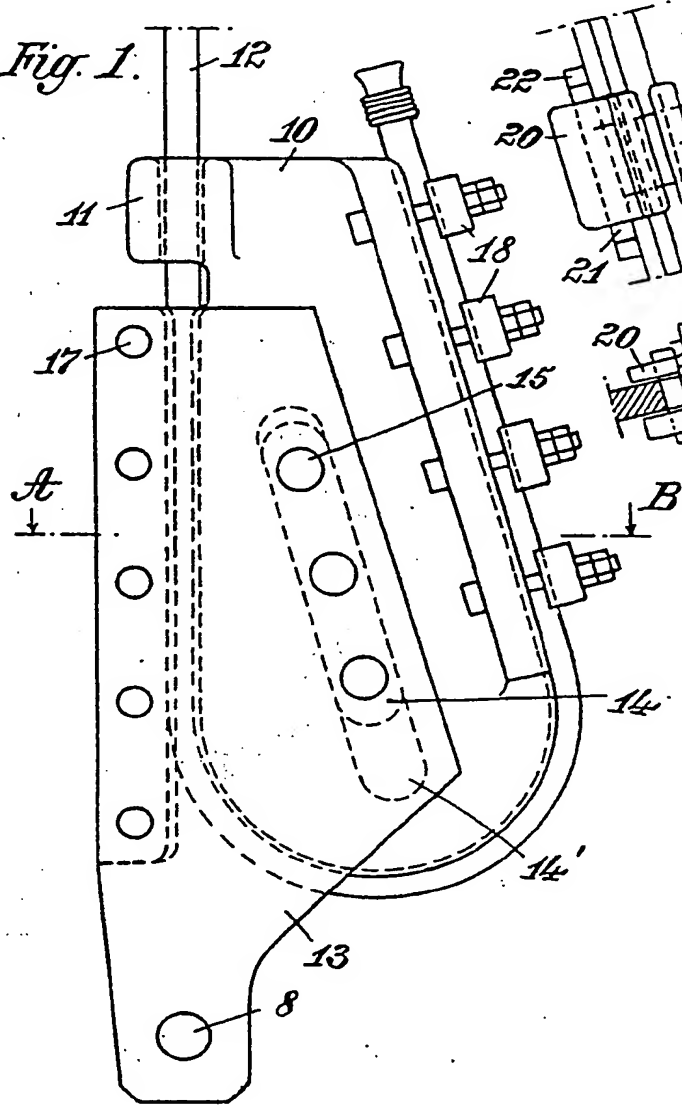
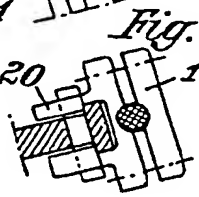


Fig. 4.

Fig. 5.



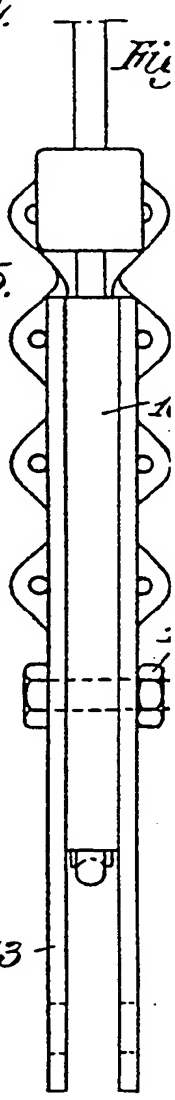


Fig. 3.

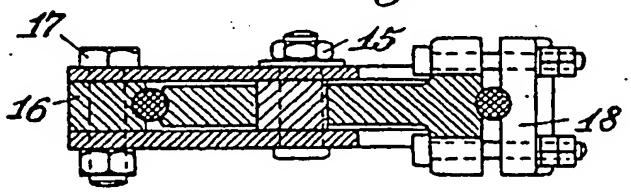


Fig. 2.

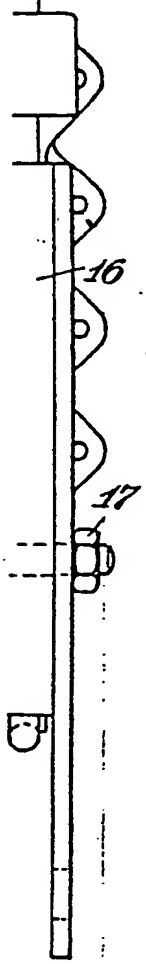


Fig. 6.

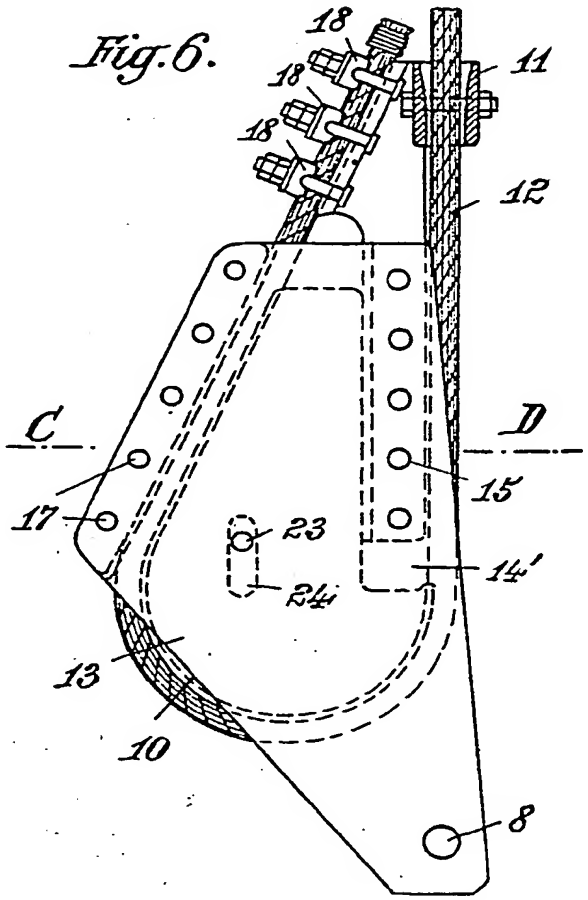
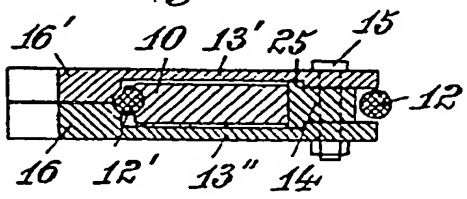


Fig. 7.



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